

Quasi-Global Precipitation as Depicted in the GPCP V2.2 and TMPA V7

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After a lengthy incubation period, the year 2012 saw the release of the Global Precipitation Climatology Project (GPCP) Version 2.2 monthly dataset and the TRMM Multi-satellite Precipitation Analysis (TMPA) Version 7. One primary feature of the new data sets is that DMSP SSMIS data are now used, which entailed a great deal of development work to overcome calibration issues. In addition, the GPCP V2.2 included a slight upgrade to the gauge analysis input datasets, particularly over China, while the TMPA V7 saw more-substantial upgrades:

- 1) The gauge analysis record in Version 6 used the (older) GPCP monitoring product through April 2005 and the CAMS analysis thereafter, which introduced an inhomogeneity. Version 7 uses the Version 6 GPCC Full analysis, switching to the Version 4 Monitoring analysis thereafter.
- 2) The inhomogeneously processed AMSU record in Version 6 is uniformly processed in Version 7.
- 3) The TMI and SSMI input data have been upgraded to the GPROF2010 algorithm.

The global-change, water cycle, and other user communities are acutely interested in how these data sets compare, as consistency between differently processed, long-term, quasi-global data sets provides some assurance that the statistics computed from them provide a good representation of the atmosphere's behavior. Within resolution differences, the two data sets agree well over land as the gauge data (which tend to dominate the land results) are the same in both. Over ocean the results differ more because the satellite products used for calibration are based on very different algorithms and the dominant input data sets are different. The time series of tropical (30°N-S) ocean average precipitation shows that the TMPA V7 follows the TMI-PR Combined Product calibrator, although running ~5% higher on average. The GPCP and TMPA time series are fairly consistent, although the GPCP runs ~10% lower than the TMPA, and has a somewhat larger interannual variation. As well, the GPCP and TMPA interannual variations have an apparent phase shift, with GPCP running a few months later. Additional diagnostics will include mean maps and selected scatter plots.